

**SYSTEMS AND METHODS FOR AUTOMATICALLY OPTIMIZING STIMULUS
PARAMETERS AND ELECTRODE CONFIGURATIONS FOR NEURO-
STIMULATORS**

ABSTRACT

Methods and devices for automatically optimizing the stimulus parameters and/or the configuration of electrodes to provide neural stimulation to a patient. In one embodiment, a system includes an electrode array having an implantable support member configured to be implanted into a patient and a plurality of therapy electrodes carried by the support member. The system can also have a pulse system operatively coupled to the therapy electrodes to deliver a stimulus to the therapy electrodes, and a sensing device configured to be attached to a sensing location of the patient. The sensing device generates response signals in response to the stimulus. The system can also include a controller operatively coupled to the pulse system and to the sensing device. The controller includes a computer operable medium that generates command signals that define the stimulus delivered by the pulse system, evaluates the response signals from the sensing device, and determines a desired configuration for the therapy electrodes and/or a desired stimulus to be delivered to the therapy electrodes.